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Sustainability policy of construction contractors: A review

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A B S T R A C T

Sustainability is an issue of concern in many industrial sectors. The construction industry is no exception. The study described in this paper adopts a critical qualitative approach to investigate sustainability policy practices in the construction industry. This approach includes a statement of principles, sustainability reporting incorporated within a financial report, and a stand-alone sustainability reporting system. The top international contractors listed by Engineering News Record (ENR) were examined. The results show that sustainability policy development varies from case to case in these companies but trends are emerging on common issues addressed. The findings show a trend of increasingly level of disclosure of corporation's commitmnets an achievements on sustainability. Similarly, the energy efficiency and conservation, greenhouse gas emission reduction and integration of renewable energy resources into projects are among the common themes of these sustainability policies disclosed by construction contractors. The construcion industry can learn from the energy sector that is advanced in sustainability reporting.

Contents

1. Introduction

The last decade witnessed an increasing level of attention to sustainability and sustainable development across all sectors over the world. The construction industry is no exception. Construction activities have major impacts on the social, environmental and economic aspects of sustainability. Positive impacts include: contributing to GDP, providing employment opportunities and producing various types of buildings and facilities to satisfy human beings' requirements. Negative impacts include: generating waste, greenhouse gas emission, noise and dust. As a result, the activities of the construction sector are under more scrutiny by the public and regulators than ever. Like other sectors, the construction industry increasingly recognizes the importance of sustainable

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building practices. This results in commitments towards sustainable practices in all stages of a construction project, i.e. design, construction and operation.

Moreover, companies have responded to greater disclosure of risks to sustainability by the development of statements of principles, sustainability reporting incorporated within a financial report, and ultimately the release of a stand-alone sustainability reporting system. This trend of public disclosure of risks to sustainability is significant in turn that sustainability reporting is now noted as becoming the norm among large corporations global wide [1]. According to an international survey conducted by KPMG, 80% of the largest 250 companies worldwide issued sustainability reports in 2008, 30% more than that of 2005 [2]. The current sustainability reporting practices are mainly on a voluntary basis as there is no legislated requirement for corporations to prepare and release sustainability reports in most countries over the world.

This paper adopts a qualitative approach to investigate the sustainability policy practices in the construction industry. It offers a content analysis of the sustainability policies of construction contractors of the top 50 international contractors listed by the Engineering News Record (ENR).

2. Sustainability policy: a literature review

2.1. Definition

The World Business Council for Sustainable Development defines sustainability reporting as "...public reports by companies to provide internal and external stakeholders with a picture of corporate position and activities on economic, environmental and social dimensions" [3] (p. 7). According to the Global Reporting Initiative, the purpose of sustainability reporting is to measure, disclose, and be accountable to "internal and external stakeholders for organizational performance towards the goal of sustainable development" [4]. In essence, sustainability reporting is to disclose the organization's commitments and achievements towards all aspects of sustainability, from both internal and external stakeholders' perspectives. The common approaches of sustainability policy include: online disclosure, a dedicated section on sustainability issues in the annual report and stand-alone sustainability report.

2.2. Drivers

Companies are increasingly to commit to the disclosure of their organisations' commitment and progress sustainability and this is reflected in the increasing amount of sustainability reporting. This trend is driven by a number of factors. The effective communication with key stakeholders is critical to the long term success of the company [5]. Sustainability reporting is also driven by a range of market, social, political, regulatory and ethical issues [6]. Using a case study approach, Kolk argues that sustainability reporting is considered to add value to a firm from the perspective of various stakeholders and contributes to the future growth of the company [7]. A study by Adams and McNicholas indicates that the personal perspective of senior management and integrity of the management affect the level and quality of sustainability reporting [8]. KPMG summarized the benefits of sustainability reporting as: (1) alignment with and capitalise on stakeholder values; (2) pre-empt stakeholder action; (3) sustain the value chain and capture operational efficiencies; (4) provide a benchmark against the best practice; and (5) provide the evidence of complying with laws, regulation, norms, codes, performance standards and voluntary initiatives [5].

In addition, a number of empirical studies show there are benefits associated with sustainability reporting. Jones et al.'s study of the impact of sustainability reporting in the top 100 Australian firms listed on the ASX found that the sustainability disclosure is statistically correlated with the financial performance of a firm, as measured by various indicators such as cash position, working capital, retained earnings, capital expenditure, and capital structure [9]. Studying a sample of 59 US companies, Brown et al. found that the quality of a sustainability report correlated positively with changes in perceived reputation [10]. Lankoski surveyed senior executives in multi-national companies on their perceptions of the impacts of various dimensions of corporate responsibility on cost and revenue [11]. His study showed that improving environmental or social responsibility can generate more revenues and efficiency savings than improving economic responsibility.

2.3. Challenges

According to Maclaren, the absence of a clearly articulated methodology of sustainability reporting presents a significant barrier for a community to achieve the goal of sustainable development [12]. Studer et al. identifies a number of barriers to companies engaging in sustainability reporting [13]. These barriers include the lack of a legal requirement to report on sustainability, poor support from senior management, and no demand from shareholders for sustainability reporting. Adams and McNicholas suggest that the other factors that impede the adoption of sustainability reporting in a corporation include matters such as a lack of understanding of how to integrate sustainability reporting practices into the strategic planning and decision making of the firm, and a lack of experience in engaging stakeholders in the reporting process [8].

2.4. Leading sustainability initiatives

Leading sustainability initiatives include: the Global Reporting Initiative (international benchmark for sustainability reporting), the Dow Jones Sustainability Indexes (lead sustainability index) and the United Nations Global Compact (lead principle framework).

2.4.1. GRI

The Global Reporting Initiative released the version 3.0 of GRI Guidelines, known as G3 in 2006. This provides a voluntary reporting framework that aims to promote sustainability reporting practices in "rigour, comparability, auditability and general acceptance" [14] (p. 233). The G3 reporting framework is consisted of four key elements (GRI 2006): (1) principles and guidance on the report contents and quality; (2) protocols for performance indicators and technical issues; (3) standard disclosures on profile, management approach and performance indicators; and (4) sector supplements, i.e. how to apply the Guidelines in a specific sector. The number of organizations listed in GRI reports increased from 9 in 1999 to 1368 in 2009 [15].

2.4.2. Dow Jones Sustainability Indexes

The Dow Jones Sustainability Indexes were established in 1999. The Indexes cover the leading companies with the best corporate sustainability practice in 57 industry groups. These sectors include: building materials & fixtures, heavy construction and home construction.

Top 10% of companies are captured on the basis of long-term economic, environmental and social criteria, including climate change strategies, energy consumption, human resources development, knowledge management, social and environmental reporting, stakeholder relations and corporate governance [16]. Total assets based on the Dow Jones Sustainability Indexes reached USD 8.3 billion by April 30, 2010.

2.4.3. UN Global Compact

The United Nations Global Compact was launched in 26 July 2000 in order to provide a policy platform and a practical framework to foster sustainable and responsive business activities. The Compact is "...a leadership initiative... to aligning business operations and strategies with ten universally accepted principles in the areas of human rights, labour, environment and anti-corruption" [17] (p. 2).

There are more than 7700 organizations across 130 countries around the world that participate in the UN Global Compact Initiative. The UN Global Compact Office is responsible for liaising with other UN agencies and participants.

3. Research methodology

This research adopted a qualitative approach to investigate the sustainability practice in the construction industry. Engineering News Record publishes Top 225 International Contractors list annually. Their data is robust enough that it has been utilized in a number of studies [18,19]. This study will focus on top 50 international contractors due to resource constraints.

A content analysis is employed to study the sustainability practices adopted by these top 50 international contractors. Table 1 shows a list of these 50 companies and their rankings in 2009.

The research questions are:

- How do these companies disclose their commitments towards sustainability? Statement of principles on web or formal report?
- If it is formal report, is it a stand-alone sustainability report or are sustainability issues addressed in an annual report?
- Is the stand alone report in accordance with the Global Reporting Initiative guidelines?
- Is the company included in Dow Jones Sustainability Index?
- Does the company participate in the UN Global Compact?

The data was collected between April 2010 and June 2010. Any sustainability reporting data released after the timeframe is not considered as inputs of this paper, which is set as a limitation of this study.

4. Findings

As shown in Fig. 1, nearly half of these top 50 international companies come from USA, Japan, Spain and Italy.

Table 1
Top 50 international contractors listed by Engineering News Record.

Rank	Firms
1	HOCHTIEF AG, Essen, Germany
2	VINCI, Rueil-Malmaison, France
3	STRABAG SE, Vienna, Austria
4	Skanska AB, Solna, Sweden
5	Bechtel, San Francisco, CA, USA
6	BOUYGUES, Paris, France
7	Saipem, San Donato Milanese, Italy
8	Bilfinger Berger AG, Mannheim, Germany
9	TECHNIP, Paris la Defense, France
10	Bovis Lend Lease, Millers Point, NSW, Australia
11	Fluor Corp., Irving, Texas, USA
12	FCC, Fomento de Constr. y Contratas SA, Madrid, Spain
13	KBR, Houston, TX, USA
15	Royal BAM Group nv, Bunnik, The Netherlands
16	Balfour Beatty plc, London, UK
17	China Communications Construction Group Ltd., Beijing, China
18	Construtora Norberto Odebrecht, Sao Paulo, Brazil
19	Consolidated Contractors Group, Athens, Greece
20	Grupo ACS, Madrid, Spain
21	Foster Wheeler AG, Clinton, NJ, USA
22	Obayashi Corp., Tokyo, Japan
23	CB&I, The Woodlands, Texas, USA
24	Kajima Corp., Tokyo, Japan
25	China State Construction Engineering Corp., Beijing, China
26	EIFFAGE, Asnieres-sur-Seine, France
27	Petrofac Ltd., Jersey, Channel Islands, UK
28	China National Machinery Industry Corp., Beijing, China
29	Chiyoda Corp., Yokohama, Japan
30	Danieli Group, Buttrio, Italy
31	Maire Tecnimont, Rome, Italy
32	OHL SA (Obrascon Huarte Lain SA), Madrid, Spain
33	McDermott International Inc., Houston, TX, USA
34	Ferrovial Agroman SA, Madrid, Spain
35	Taisei Corp., Tokyo, Japan
36	Joannou & Paraskevaides Group of Cos., Guernsey, UK
37	Enka Construction & Industry Co. Inc., Istanbul, Turkey
38	IMPREGILO SpA, Milan, Italy
39	Techint Group, Milan, Italy
40	Toyo Engineering Corp., Chiba, Japan
41	Orascom Construction Industries (OCI), Cairo, Egypt
42	Tecnicas Reunidas, Madrid, Spain
43	Jan De Nul Group (Sofidra SA), Steinfort, Luxembourg
44	PCL Construction Enterprises, Edmonton, Alberta, Canada
45	Jacobs, Pasadena, CA, USA
46	JGC Corp., Yokohama, Japan
47	Keller Group plc, London, UK
48	Leighton Holdings Ltd., St. Leonards, NSW, Australia
49	BESIX SA, Brussels, Belgium
50	Shimizu Corp., Tokyo, Japan

Source: Ref. [20].

4.1. Online disclosure

Among these top 50 international contractors, about 80% have dedicated webpages to disclose their sustainability policies. The title of these webpages varies, with references to 'sustainability', 'sustainable development', 'corporate social responsibility', 'corporate responsibility and social responsibility'. The top international contractor, Hochtief AG, has a dedicated web called "sustainability/CR" to report its principles, policies, management structure and activities on sustainability issues. In this website, very detailed information related to sustainability policy is made available to the public. For instance, the governance structure on corporate responsibility is listed in Fig. 2.

In addition, sustainability is linked to a vision statement: "HOCHTIEF is building the future. Along with our partners, we expand horizons, link people and organizations, create new ways to think and act, and continually enhance the values entrusted to our care" [21]. Under this vision statement, various objectives are defined on six inter-linked areas. These objectives are given as a commitment to achieving sustainable products and services; active climate protection; resource protection; an attractive working environment; good corporate citizenship, compliance and ethics management. Very detailed information was given on the webpages on the principles and approaches to achieve sustainability from economy, ecology, society and stakeholders' perspectives. The awards webpage shows the significant achievements on sustainable development, such as "Best of European Business 2010" and "World's 100 most sustainable corporations by the World Economic Forum 2009".

Most of the lower ranked companies do not provide such detailed information on the web. For example, PCL Construction, ranked 44th, did not report principles, policies, management structure for sustainability on the web although it disclosed activities on green building practices and addressing safety issues. BESIX SA, ranked 49th, reported very briefly on the web on health, safety and the environment, however nothing on the policies and approaches taken by the corporation to target sustainability issues.

All 7 Japanese contractors have set up dedicated web sites to disclose their policies and activities on sustainable development,

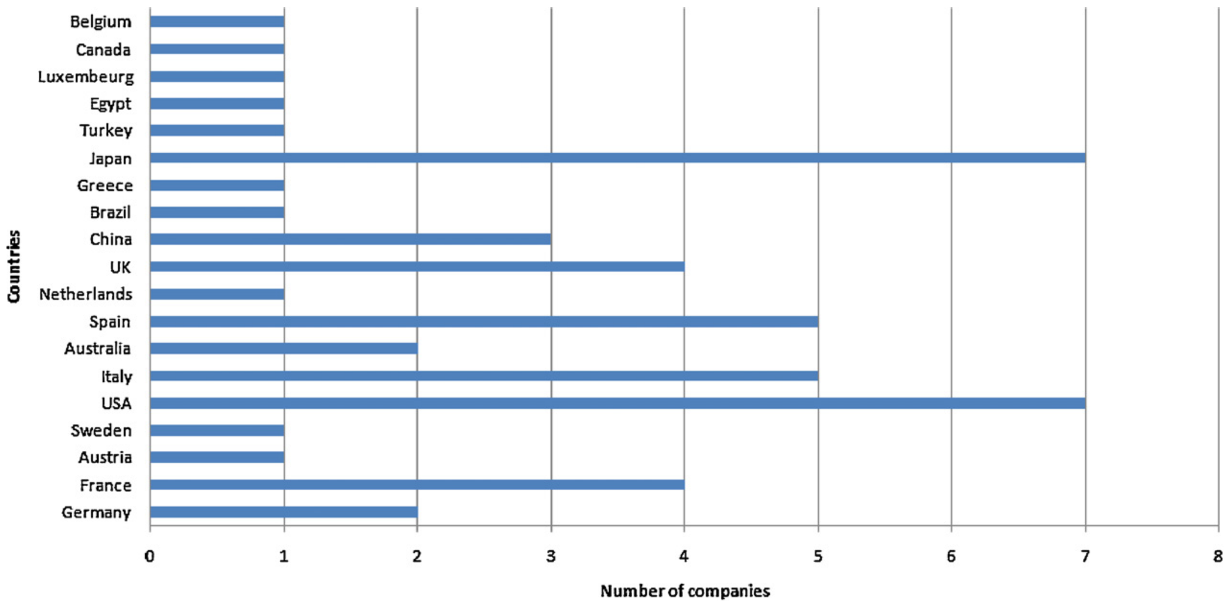


Fig. 1. Distribution of top 50 international contractors listed by ENR.

and generally use the term corporate social responsibility rather than sustainability. Almost all Chinese contractors did not have a dedicated web site on sustainability except the China National Machinery Industry Corp, which ranked 28th. The China National Machinery Industry Corp released the CSR report 2009 which covered the policies, approaches and management structure for economic, social and environmental sustainability issues [22].

The level of details of sustainability policy disclosed on the web varies as well. 42% of the top 50 international contractors provide fairly detailed information on web whereas there are still more than half of them choose not make much available online.

Common contents covered on the webpages include:

- Principles of sustainability/sustainable development, e.g. missions and values to sustainability.
- Approaches to achieve sustainability in projects, e.g. environmental friendly construction techniques, social actions.
- Management structure and management systems related to sustainability, e.g. corporate sustainability committee, ISO 14001 certified.
- Policies related to sustainability, e.g. the goals and targets set by the corporation management.
- A review of commitments and activities related to sustainability.

4.2. Sustainability reporting

As shown in Fig. 3, a large percentage of companies document their sustainability commitments in either standalone sustainability report or as a section of their annual report. It is interesting to note that 90% of top 20 international contractors



Fig. 2. Corporate responsibility management structure of Hochtief, adapted from: http://www.hochtief.com/hochtief_en/9175.jhtml.

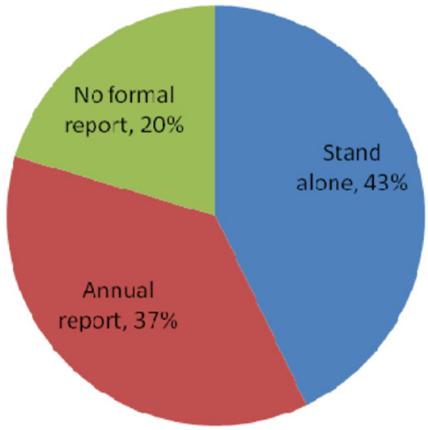


Fig. 3. Sustainability reporting practice adopted by top 50 international contractors.

have adopted sustainability reporting practice where 58% of them release standalone sustainability report annually.

The number 2 ranked top international contractor, Vinci, had a section called "Sustainable development" in its 2009 annual report. Four areas were covered in this section:

- Strategy and policy on sustainable development: managing risks associated with sustainability development whereas maintaining economic growth.
- Commitments towards sustainability, such as corporate governance, human resources, civic engagement, stakeholder relationship, environment, R&D innovation. Goals under each category are clearly identified. For instance, there are four goals under environment category, i.e. to limit the environmental impact of our business activities, to combat climate change, to improve energy efficiency, to limit consumption of natural resources, to improve the biodiversity. The performance in 2009 and objectives for 2010 are clearly defined. For example, in terms of environment, 2.15 million tonnes of emissions were generated in the scope 1&2 of the audit in 2009 where as "to quantify Scope 3 and 3+ emissions" was defined as the objective to be achieved in 2010.
- Activities on sustainable development from social, environmental and innovation perspectives. These include Vinci's initiatives on Occupational Health and Safety of employees, equal opportunities, development human resources, protecting environment and promoting biodiversity, funding research in eco-design and the sustainable city, etc.
- Independent third party audits, e.g. being listed by the Dow Jones Sustainability Indexes, the Advanced Sustainable Performance Indices, the European Low Carbon 100 Europe index, and the Carbon Disclosure Leadership Index.

In Vinci, the Sustainable Development Committee, which consists of representatives from all departments, is responsible for developing and reviewing the policy, approach and performance indicators for sustainable development [23]. It reports to the Executive Committee.

In addition, detailed social and environmental data in 2009 were given in this report such as:

- *Social responsibility:* Employing 161,746 employees in around 100 countries; the frequency rate of lost-time accidents was 10.49 and the severity rate was 0.67; over €142 million were invested on human resource trainings.
- *Environment:* Electricity consumption dropped from 646 GWh in 2008 to 619 GWh in 2009; CO_2 emissions dropped from 2,395,420 tonnes in 2008 to 2,154,560 tonnes in 2009.

Strabag SE, ranked the third in the international contractors by ENR release stand alone sustainability report annually. According to Strabag SE, sustainability report represents its desire to document achievements in sustainability and complements the annual report by providing detailed information on social and environmental sustainability issues. In its sustainability report 2008, the following matters were covered:

- Mechanisms to communicate with stakeholders, e.g. code of conduct, annual report, press releases, customer information, press conferences, internet appearance, etc.
- Visions, strategies and principles of the corporation, where social accountability and sustainable activity are part of.
- Commitments to environmental, social and economic sustainability. These include reducing the waste and emissions, introduction of certified environmental management systems in accordance with ISO 14001, developing human resources, reducing amount of raw materials consumed, investing in R&D on sustainability issues, sponsoring regional social accountability initiatives, investing in renewable energy developments, etc. Social and environmental targets were clearly defined. For instance, "Inclusion of SA 8000 as mandatory element for pan-European tenders" and "Participation in Fleet of the Future project by the Federal Ministry of Agriculture, Forestry, Environment and Water Management" are two of environmental targets.

In Strabag's annual report 2009, a dedicated section called "corporate social responsibility" demonstrated the corporation's achievements on sustainability in 2009. In this report, sustainability is defined as "the balance between achieving business objectives while respecting social and environmental aspects" [24] (p. 78). In 2009, the Strabag SE reduced CO_2 emissions by 28,000 tonnes by means of the optimization of construction logistics and transportation. Similarly, ethical behavior, sustainable procurement and OH&S have been given priority by the corporation. About €5 million were spent on R&D in 2009.

It is interesting to note that all top 10 international contractors have documented their commitments and achievements on sustainability either in the stand alone sustainability report or a dedicated section in the annual report.

In contrast, only three of 41st–50th ranked international contractors followed the same practice. Orascom Construction Industries, ranked 41st, stated in the annual report 2008 that "Information on the company's corporate social responsibility will be presented in a separate Sustainability Report." However this report cannot be located in its website. Other companies covered some corporate sustainability issues rather than all three dimensions of sustainability in the annual report. For example, Keller Group plc covered social sustainability in its annual report. Jan De Nul Group's annual report 2008 had a narrow focus on the safety, health, and environment.

4.3. GRI

28% of top 50 international contractors have their sustainability report listed by the Global Reporting Initiative.

As shown in Table 2, there are 70% of top 10 international contractors having their sustainability reports listed by the Global Reporting Initiatives. This is the total number of companies ranked by ENR 11th–50th that have their reports verified by GRI. It appears the big companies are more likely to invest in sustainability reporting verified by the external body.

Table 2
Sustainability reports in accordance with GRI.

ENR ranking	Number of contractors having their sustainability reports in accordance with GRI
1st–10th	7
11th–20th	4
21st–30th	0
31st–40th	3
41st–50th	0
Total	14

Table 3
Number of companies listed in the Dow Jones Sustainability Indexes.

ENR ranking	Number of contractors listed in DJSI
1st–10th	4
11th–20th	2
21st–30th	0
31st–40th	1
41st–50th	1
Total	8

For instance, Hochtief AG's sustainability report has been included in the GRI list since 2005. As stated in its sustainability report 2009, its reporting practice adheres to the GRI to ensure the transparency and comparability of the corporation's sustainability performance. Some companies just use GRI as the guideline. Obayashi Corp., for example, stated in its CSR report 2009 that GRI 2006 is used as a reference guideline. Another Japanese contractor, Chiyoda Corp., stated in its CSR report 2009 that the report was prepared "referring to GRI Guidelines (G3)".

4.4. Dow Jones Sustainability Indexes

Only 16% of the top 50 international contractors are listed in the Dow Jones Sustainability Indexes, as shown in Table 3.

Among top 10 international contractors, 4 (Hochtief AG, Vinci, Technip, Bovis Lend Lease) were listed and another 4 (Skanska, Bouygues, Saipem, Bilfinger) were invited. Skanska AB, ranked 4th, was ever listed but was deleted in 2003.

Hochtief AG (ranked 1st), Vinci (ranked 2nd), Fomento De Construcciones Y Contra (ranked 12th), Balfour Beatty (ranked 16th), Grupo ACS (ranked 20th), Obayashi Corp. (ranked 22nd), Kajima Corp. (ranked 24th), Ferrovial Agroman SA (ranked 34th), Acciona (ranked 73rd), and Leighton Holdings (ranked 48th) are identified as sustainability leaders in the Heavy construction sector [25].

4.5. UN Global Compact

As shown in Table 4, 30% of the top 50 international contractors participate in the United Nation Global Compact.

Vinci listed initiatives in 2009 in respect of the 10 principles of the UN Global Compact. For instance, the following iniatives were implemneted in 2009 to address the environmental protection principle of UN Global Compact [23]:

Table 4
Number of companies participating into the UN Global Compact.

ENR ranking	Number of contractors participating into the UNGC
1st–10th	6
11th–20th	4
21st–30th	2
31st–40th	3
41st–50th	0
Total	15

- Systematisation of analyses of project environmental risks and product risks.
- Systematisation of approaches to projects based on life cycle analysis in the tender and design phases.
- Integration of renewable energy sources in our own activities and commercial offers.
- Strengthening of environmental reporting and extension to international operations; 91% of the scope covered.
- Joint effort on energy savings and greenhouse gas emission reductions at fixed premises and worksites.
- Creation of a chair in the eco-design of building complexes and infrastructure with ParisTech. Launch of 12 research topics associating VINCI experts with the chair.
- Seminar on eco-districts by The City Factory.
- Creation of a Regional Development Pivot Club.

Once again, more top 20 companies participate into the UN Global Compact. None of 41st–50th ranked international companies particpate into the UN Global Compact initiative.

In summary, an analysis of top 50 international contractors listed by ENR shows a trend that sustainability policy development is merging. It appears international contractors increasingly pay attention to sustainability issues where efforts have been made to communicate with stakeholders on how these issues were dealt with. However, it is not surprising to note that higher ranking companies commit more on reporting their policies, strategies, objectives and performance on sustainability than lower ranking companies.

5. Conclusion

Sustainability reporting is a current phenomenon in the construction industry. This paper employed a content analysis approach to investigate the sustainability practice adopted by top 50 international contractors listed by the Engineering News Record. The results show that even though the practices vary, the trend of sustainability policy is emerging. First, the number of companies reporting sustainability issues is increasing. This indicates that contractors increasingly recognize the importance of disclosure of the corporation's commitments and achievements on sustainability. Second, highly ranked companies tend to disclose much detailed information in the form of either stand alone reports, or a dedicated section in the annual report. Third, highly ranked companies tend to welcome more scrutiny on their sustainability agenda and performance, by being listed on the GRI or the Dow Jones Sustainability Indexes. Fourth, energy related themes featured the sustainability policies of construction contractors such as energy conservation, energy efficiency, greenhouse gas emission reduction and integration of renewable energy resources into projects. Future studies are required to investigate the barriers and tangible benefits associated with the commitments to sustainability reporting in the construction industry. Similarly, sustainability reporting and disclosure forms part of assessment of sustainability of renewable energy resources [26,27]. According to Streimikiene et al., this practice reflects the corporate social responsibility of sustainable energy developers [28]. Thus, the construction industry can learn from the energy sector on enhancing the sustainability reporting practice. This study provides a useful reference to both policy makers and industry practitioners to further improve sustainability performance of the construction industry.

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